

SUBJECT INDEX

A

- Abraham, S. N., 383-408
- Acetate
synthesis of pyruvate from, 6
- Acetobacterium kivui*, 25
- Acetobacterium woodii*, 25
- Acetoin
metabolism in *Bacillus subtilis*, 117-18
- Acquired immunodeficiency syndrome, 219-20
- Actinomyces naeslundii*
type 2 pili of
subunit polymerization and, 396
- Actinomycin D
giardavirus and, 257
- Adenosine triphosphate
methylreductase reaction and, 18
- Adhesins, 384
receptor binding and assembly domains of, 398-401
- Aflatoxin B1
hepatocellular carcinoma and, 486
- Agrobacterium*
 β -glucans in, 588
- Agrobacterium rhizogenes*, 347
- Agrobacterium tumefaciens*
osmoregulation in, 586
- AIDS
See Acquired immunodeficiency syndrome
- β -Alanine betaine
osmoprotectant activities of, 584
- Albendazole
for helminth infection, 449
- Aldobiononic acid, 23
- Alfalfa
nodulation of, 347
feedback suppression of, 365
inhibition of, 363
regulation of, 362
nodule-specific glutamine synthetase from, 355
- Alkalophiles
isolation of, 96-97
- Allantoin
degradation pathway of, 22
- Alveolar macrophages
host defense against mycotic agents and, 522-24
- α -Amanitin
giardavirus and, 257
- Amino acids
catabolite repression in *Bacillus subtilis* and, 123-24
- γ -Aminobutyric acid betaine
osmoprotectant activities of, 584
- γ -Aminocrotonic acid betaine
osmoprotectant activities of, 584
- Ammonia monooxygenase
trichloroethylene oxidation by, 288
- Anabaena torulosa*
gene transcription in
osmotic control of, 589
- Anabolic steroids
hepatocellular carcinoma and, 486
- Ancylostoma braziliense*
ivermectin activity against, 447
- Ancylostoma caninum*
ivermectin activity against, 447
- Ancylostoma duodenale*
ivermectin activity against, 446-47
- Anderson, S., 607-29
- Angiostrongylus cantonensis*
ivermectin activity against, 464
- Anticarsia gemmatilis*
baculovirus insecticide for, 75
- Antimony complexes
pentavalent
for *Leishmania* infection, 418, 437
- Antiparasitic agents
for human use, 445-69
- Archaeobacteria, 11-14
- Aromatic oxygenases
trichloroethylene oxidation by, 288-92
- Arthrobacter crystallopoietes*, 23
- Ascaris lumbricoides*
ivermectin activity against, 446
- Asparaginase
in *Bacillus subtilis*, 123
- Aspartyl acid proteinase
Candida albicans virulence and, 198-200
- Aspergillosis
alveolar macrophages and, 523
- Aspergillus*
conidia of
alveolar macrophages and, 522
host defense against
polymorphonuclear leukocytes and, 518-19
- Atlas, R. M., 137-56
- ATP
See Adenosine triphosphate
- Autographa californica*, 71
- Avermectins
detection of, 100
production of, 446
for *Trichinella spiralis*, 464
- Aztreonam, 57
- ## B
- Babesia*
virus-like particles in, 253
- Babesia bovis*
RNA viruses in, 260
- Bacillus cereus*
 β -lactamase of, 47
- Bacillus licheniformis*
asparaginase expression in, 123
 β -lactamase of, 39-40
penicillin-binding domain of, 39, 47
- Bacillus macerans*
pyruvate reactions in, 7
- Bacillus stearothermophilus*
osmoregulation in, 585
- Bacillus subtilis*
ammonia assimilation systems in, 120-23
glutamate synthase and, 123-24
glutamine synthetase and, 120-23
carbohydrate metabolism
genes in, 113-19
carbon catabolite repression
in, 108-19
mutants and, 112-13

- cytoplasmic membrane of
stretch-activated channels
in, 580
msDNA and, 165
nitrogen catabolite repression
in amino acids and, 123-
24
penicillin-binding proteins of,
57
sporulation in
catabolite repression of,
124-29
sugar transport in, 109-12
urease, asparaginase, nrg gene
expression in, 123
- Bacteria**
compatible solutes in, 582-83
hepatonaviral DNA cloned in,
479
osmoregulation in, 569-97
genes and proteins in, 588-
97
mechanisms of, 571-81
physiology of, 581-88
See also specific type
Bacterial symbiont
legume nodulation and, 348-
54
Bacteriophage λ
assembly of
GroE chaperonins and,
310-11
Bacteriophage morphogenesis
GroE genes and, 308-11
Bacteriophage P22
tailspike endorhamnosidase of
synthesis of, 616
Bacteriophage T4
assembly of
groES gene product and,
309-10
Bacteroides nodosus
type 4 pilins of, 401-2
Baculoviruses, 69-85
classification and properties
of, 70-71
expression vector system of,
78-80
infection and replication in in-
sects, 71-74
as viral insecticides, 74-75
Baculovirus insecticides, 74-75
environment and, 80-81
field-release testing of, 81-83
Barnase
refolding of
framework hypothesis and,
611
Bean
nodulation mutants of, 357
nodule-specific glutamine syn-
thetase from, 355
Beggiatoa, 22
Beverley, S. M., 417-39
Bio-assays, 100-1
Blastomyces dermatitidis, 190
chemotactic factors produced
by, 519
compromised host and, 511
yeast of
alveolar macrophages and,
522
Blastomycosis
acquisition of, 511
Bleomycin A2
dsRNA viruses and, 253
Bodo caudatus
RNA editing in, 332
Bombyx mori
"jaundice disease" of, 69-70
Bovine herpesvirus, 272
Bradyrhizobium
 β -glucans in, 588
symbiotic genes of, 348-50
Bradyrhizobium japonicum
nod gene organization in, 350
Brevibacterium lactofermentum
osmoregulation in, 586
Bromethanesulfonate
methanogenesis and, 11
Brugia malayi
ivermectin activity against,
464
Budded virus, 71
Burkitt's lymphoma
chromosomal translocations
in, 493
- C**
Caetano-Anolles, G., 345-70
Campbell, W. C., 445-69
Cancer
colorectal
p53 gene product and, 494
Candida albicans
adherence of, 203-7
antigenic variability of, 208-9
blastomycosis and hyphae of,
513
chemical defenses to, 516
chemotactic factors produced
by, 519
chromosomal instability of,
208
complement fixation by, 519
host defense against
polymorphonuclear leuko-
cytes and, 518-19
hyphal production by, 190-97
natural killer cells and, 527,
530
in normal flora of humans,
511
proteinase activity of, 197-
203, 512
receptor-ligand molecules of,
203-6
spherules of
polymorphonuclear leuko-
cytes and, 522
variability potential of, 207-9
virulence factors of, 187-210
virulence genes in, 188
yeast of
alveolar macrophages and,
522
Candida immitis
arthroconidia and endospores
of
alveolar macrophages and,
522
complement fixation by, 519
proteinases produced by, 512
tissue phase of
hormones and, 515
Candida neogromans
complement fixation by,
519
Candida parapsilosis, 198
Candida immitis
natural killer cells and, 527
Candidiasis, 187-88, 511
vaginal
hormones influencing, 515-
16
Carbamyl phosphate
oxalurate phosphorolysis and,
22
Carbon
metabolism in *Bacillus sub-
tilis*, 107-19
Carbon dioxide
methanogenesis from
enzymology of, 17-20
synthesis of pyruvate from, 6
Carbon dioxide reduction factor,
16
Carcinogenesis
chromosomal translocation
and, 493
Carcinoma
hepatocellular
hepatonaviral DNA in, 489-
91
hepatonaviruses and, 475-99
Carnitine
osmoprotectant activities of,
584
Casuarina
nodulation of, 347
Catabolite repression
in *Bacillus subtilis*, 108-24
Cell cultures
hepatonavirus-related
oncogenesis in, 495-96

- Cellular immunity
impaired
herpesvirus transmission
and, 266
- Cellular resistance
mycotic agents and, 517-31
- Cellular transcription factors
human immunodeficiency
virus-1 replication and,
225-27
- Cephalexin, 59
- Chain entropy
protein stability and, 609-10
- Chaperones
molecular
bonding to nascent
polypeptides, 613-15
interactions with unfolded
proteins, 625-28
pilus assembly and, 387-93
release of
polymerization of pilus sub-
units and, 392-93
- Chaperonins
GroE, 301-21
model for action of, 317-21
substrates of, 314-16
- Chickenpox
pathogenesis of, 269
- Chimpanzees
hepatitis B virus-infected, 486
- Chitinase genes
developmental regulation of,
355
- Chloramphenicol
msDNA biosynthesis and, 172
- Choline-O-sulfate
osmoprotectant activities of,
584
- Chromatium, 21
- Chromatophores, 21
- Chromomycosis
acquisition of, 511
- Chromosomal translocation
carcinogenesis and, 493
- Chronic granulomatous disease
opportunistic mycotic infec-
tion and, 520
- Circular DNA
in *Leishmania*, 419
- Cirrhosis
hepatitis B virus infection
and, 484-85
- Citrate
metabolism in *Bacillus sub-
tilis*, 118-19
- Citrobacter freundii*
msDNA and, 165
- Citrobacter freundii*
 β -lactamase of, 39-40
- Clostridium pasteurianum*
pyruvate reactions in, 6-7
- Clostridium tetanomorphum*, 23
- Clover
nodulation of, 362
inhibition of, 363
- Coccidioides immitis*
compromised host and, 511
- Coccidioidomycosis, 524
acquisition of, 511
genetic predisposition to, 513-
14
pregnancy and, 515
- Coenzyme F₄₂₀, 14
- Coenzyme F₄₃₀, 15-16
- Coenzyme M, 10-11
- Coleoptera
baculovirus infection in, 71
- Colorectal cancer
p53 gene product and, 494
- Compatible solutes
bacterial, 582-83
- Complement fixation
pathogenic fungi and, 519
- Corrins
methylreductase reaction and,
18
- Cotton
baculovirus insecticide for,
75
- Cowpea
nodulation of, 350, 362
- Crenothrix*, 21
- Critidia fasciculata*
RNA editing in, 331
- Croen, K. D., 265-78
- Crypticity, 399
- Cryptococcosis
acquisition of, 511
alveolar macrophages and,
523
- Cryptococcus neoformans*
alveolar macrophages and,
522
blastocystidia of, 513
capsule of
polymorphonuclear leuko-
cytes and, 521-22
chemical defenses to, 516
natural killer cells and, 527-
30
- Csonka, L. N., 569-97
- Cullen, B. R., 219-43
- Cutler, J. E., 187-210
- Cyanobacteria
hypoosmotic shock and, 588
- Cyclohexanone monooxygenase
trichloroethylene oxidation
and, 295
- Cyclophilin, 617
- Cyclosporin A
receptor proteins for, 618
- Cystobacter ferrugineus*
msDNA in, 165
- Cystobacter fuscus*
msDNA in, 165
- Cystobacter viroleaceus*
msDNA in, 165
- Cytochrome c
refolding of
framework hypothesis and,
611
- Cytochrome P-450
trichloroethylene oxidation by,
286-88
- Cytomegalovirus
recurrence of
cellular immunity and, 266
- Cytoplasmic membrane
protein translocation across
mechanisms of, 619-20
- D
- Deazaflavin, 14
- Decoyinine
sporulation in *Bacillus subtilis*
and, 125-28
- Deletion analysis
yeast *KAR1* gene domain
structure and, 551-52
- Dermatophytes
growth of
optimal conditions for, 511
keratinases produced by, 512
- Dermatophytoses, 201
acquisition of, 511
- Dibromosethane
reductive dehalogenation of,
285
- Dichloroethylene
methanotrophic oxidation of,
293
- Dichloroethane
reductive dehalogenation of,
285
- Dictyostelium discoideum*, 361
- Diethylcarbamazine
for onchocerciasis, 450
- α -Difluoromethylornithine
Leishmania resistant to, 426
- Dihydrofolate reductase
Leishmania drug resistance
and, 421-22
- 3-Dimethylsulphoniopropionate
osmoprotectant activities of,
584
- Dimethylthetin
osmoprotectant activities of,
584
- Diptera
baculovirus infection in, 71
- DNA
amplified
drug resistance genes in,
418

- circular
in *Leishmania*, 419
cloning of
polymerase chain reaction
and, 153-55
hepadnaviral
in hepatocellular carcinoma,
489-91
See also kDNA; msDNA
DNA polymerase I
dsRNA viruses and, 253
reverse transcriptase activity
of, 178
DNase I
dsRNA viruses and, 253
DNA sequence analysis
yeast *KAR2* gene and, 557
DNA target sequences
quantification of
polymerase chain reaction
and, 149-50
DNA transfection vectors
for *Leishmania*, 418
Douglas-fir tussock moth
baculovirus insecticide for, 74
Drosophila melanogaster
ninA gene of
coding for cyclophilin, 617
Drug resistance
in *Leishmania*, 418
mechanisms of, 420-21
Drug resistance genes
in amplified DNA, 418
dsRNA viruses, 253-59
Duck hepatitis B virus, 478
homology with other hepadna-
viruses, 479-82
infection due to, 489
transmission of, 485
- E
Ectothiorhodospira halochloris
export systems of, 588
osmoregulation in, 586
Edwardsiella tarda
msDNA and, 165
Eimeria
virus-like particles in, 253
Eimeria maxima
oocysts and sporozoites of
RNA viruses in, 260
Eimeria necatrix
oocysts and sporozoites of
RNA viruses in, 260
Eimeria stiedae
sporozoites of
dsRNA virus in, 260
Electrostatic interactions
protein stability and, 608-9
Endoplasmic membrane
protein translocation across
mechanisms of, 619-20
Ensley, B. D., 283-97
Entamoeba
virus-like particles in, 252
Entamoeba histolytica
virus-like particles in, 252
Enterobacteriaceae
osmoprotectant activities for
compounds with, 584
Enterobius vermicularis
ivermectin activity against,
448
Enterococcus hirae
penicillin-resistant, 60
Epstein-Barr virus
reactivation of, 276
recurrence of
cellular immunity and, 266
Equine infectious anemia virus,
241
Erwinia amylovora
msDNA and, 165
Escherichia coli
carbon catabolite control in,
108
glycine betaine aldehyde de-
hydrogenase of
purification of, 597
groE operon of, 303
heat-shock proteins in
regulation of, 614
kdpABC operon of, 592-93
membrane-derived oligosac-
charides in, 588
msDNA in, 164-65
outer membranes of
stretch-activated channels
in, 580
P and type 1 pili of, 384-87
physiology of
GroE proteins and, 311-14
ProP transport system of,
572-73, 597
protein translocation in
cytosolic protein SecB and,
621-23
proU operon of, 593-96
retrotrans in, 180
thioredoxins in, 624-25
trigger factor in, 623
type 1 pili of
binding specificities of,
400-1
subunit polymerization and,
396
Escherichia coli K-12
ompF and *ompC* genes of
expression of, 589-92
17- β -Estradiol
tissue phase of *Candida im-*
mitis and, 515
Ethyl methane sulfonate
plant nodulation mutants and,
357
- Eukaryotes
endoplasmic membrane in
protein translocation across,
619-20
retroelements in, 164
- F
Factor 342, 14-15
Fasciola hepatica
ivermectin activity against,
464
Fayet, O., 301-21
Ferredoxin, 5-7
Fever
herpesvirus reactivation and,
276
Filial infection
ivermectin for, 461-64
Filiariasis
lymphatic
ivermectin for, 463-64
ivermectin safety and
tolerability in, 465-67
Fisher, S. H., 107-29
FK506
receptor proteins for, 618
Flavin adenine dinucleotide, 6
Flexibacter elegans
msDNA in, 165
Formaldehyde
methanogenesis from, 15
Formaldehyde activation factor,
15
Formylation
coenzyme of, 16
Formylmethanofuran, 19-20
Formylmethanofuran de-
hydrogenase, 19
Framework hypothesis, 611
Fungal disease
cellular resistance to, 517-31
genetic predisposition to, 513-
15
host factors affecting, 513-16
host-parasite interactions in,
510-16
susceptibility to
hormonal factors in, 515-16
Fungi
natural resistance to, 509-31
pathogenic
barriers to infection with,
516-17
retroelements in, 164
- G
Gallionella, 21
Gas chromatography
microbial screening and, 100

- Gene amplification
in *Leishmania*, 417-39
frequency of, 429
mechanism of, 433-36
role in biology and evolution, 436-39
protooncogene expression and, 491
- Gene probes
creation of
polymerase chain reaction and, 153-55
Geodermatophilus, 23-24
Georgopoulos, C., 301-21
Ghuysen, J.-M., 37-60
Giardia lamblia
dsRNA viruses in, 253, 255-58
Giardiasis, 255-58
comparison with mycoviruses, 258-59
- Glucanase genes
developmental regulation of, 355
- Glucanase
metabolism in *Bacillus subtilis*, 115
- Glutamate
osmoprotectant activities of, 584
- Glutamate synthase
Bacillus subtilis ammonia assimilation systems and, 123-24
- Glutamine synthetase
Bacillus subtilis ammonia assimilation systems and, 120-23
nodule-specific, 355
- Glycine betaine aldehyde dehydrogenase
Escherichia coli
purification of, 597
- Glycosyltransferase
Leishmania resistant to, 425
- Gram-negative bacteria
periplasmic space in
osmotic regulation of, 577
- Granados, R. R., 69-85
- Granulosis viruses, 70-71
- Gresshoff, P. M., 345-70
- gRNA, 335-37
characteristics of, 335
coding sequences of, 335-37
models of, 339
- GroE chaperonins
action of
model for, 317-21
substrates of, 314-16
- GroE genes
bacteriophage morphogenesis and, 308-11
- GroEL proteins
evolutionary conservation of, 305-8
- GroE proteins, 303-5
Escherichia coli physiology and, 311-14
- GroES proteins
evolutionary conservation of, 305-8
- Ground squirrel hepatitis virus, 478
homology with other hepadnaviruses, 479-82
infection due to, 487-88
- Guanidine hydrochloride
type I pili and, 396-97
- Guide RNA
See gRNA
- Gypsy moth
baculovirus insecticide for, 74
- H
- Haemophilus influenzae*
type b pili of
assembly of, 388
- Hanson, A. D., 569-97
- Heat-shock proteins
Escherichia coli
regulation of, 614
- Helminth infection
combined chemotherapy for, 449
ivermectin safety and tolerability in, 465-67
- Hemagglutination
bacterial-mediated, 384
- Hepadnaviral DNA
in hepatocellular carcinoma, 489-91
- Hepadnaviruses
gene products of, 478-82
hepatocellular carcinoma and, 475-99
infection due to
nonneoplastic disease and, 483-85
molecular structure of, 478-82
oncogenesis in experimental systems related to, 495-97
replication of, 482-83
- Hepatitis
non-A, non-B, 486
- Hepatitis B, 271
- Hepatitis B virus
homology with other hepadnaviruses, 479-82
infection in chimpanzees, 486
molecular structure of, 478-82
surface antigen of, 485-86
transmission of, 477
- Hepatitis C virus
hepatocellular carcinoma and, 486
- Hepatitis V virus
surface antigen of, 476
- Hepatocarcinogenesis
insertional mutagenesis and, 492-93
retinoic acid receptor and, 493
- Hepatocellular carcinoma
hepadnaviral DNA in, 489-91
hepadnaviruses and, 475-99
- Hepatoma
hepatitis B virus infection and, 484
- Herpes simplex viruses
reactivation of
disease transmission and, 266
- Herpesviruses
carcinogenicity of, 476
latency of, 271-72
reactivation infections due to features of, 270
reactivation of, 276-77
disease transmission and, 266
- Hexane monooxygenases
trichloroethylene oxidation and, 295
- High-performance liquid chromatography
microbial screening and, 100
- Hippurase, 3
- Histidine
metabolism in *Bacillus subtilis*, 119
- Histoplasma capsulatum*, 190
chemical defenses to, 516
complement fixation by, 519
compromised host and, 511
microconidia and yeast of alveolar macrophages and, 522
natural killer cells and, 527
- Histoplasmosis
acquisition of, 511
- Homeostasis
prokaryotic osmoregulation and, 571-73
- Hookworm infection
ivermectin activity against, 446-47
- Hormones
susceptibility to mycotic disease and, 515-16
- Hultgren, S. J., 383-408
- Human immunodeficiency virus-1
gene expression in infected cells, 227-32

- mRNAs of, 232-36
 as prototypic complex retrovirus, 240-43
 replication of, 219-43
 cellular transcription factors and, 225-27
 cycle of, 223-40
 proviral synthesis and integration in, 223-25
 virion assembly and release in, 239-40
 RNA expression patterns in, 236-39
- Hydrogen
 interspecies transfer of, 8-10
 methanogenesis from
 enzymology of, 17-20
- Hydrogen bonding
 protein stability and, 609
- Hydrophobic effect
 protein stability and, 609
- Hydroxyproline-rich glycoproteins, 355
- nodulin gene coding for, 356
- Hymenolepis diminuta*
 ivermectin activity against, 464
- Hymenoptera
 baculovirus infection in, 71
- Hypotension
 ivermectin therapy and, 465
- I**
- Immunity
 cellular
 herpesvirus transmission and, 266
 host-acquired specific
 Candida albicans and, 209
 immunocompromised host
 candidiasis and, 187-88
 immunosuppression
 herpesvirus reactivation and, 276
- Inclusion bodies
 protein folding and, 615-17
- Inouye, M., 163-84
- Inouye, S., 163-84
- Insecticides
 baculovirus
 environment and, 80-81
 field-release testing of, 81-83
 detection of
 bio-assays and, 100
- Insects
 baculovirus infection and
 replication in, 71-74
 retroelements in, 164
- Insertional mutagenesis
 hepatocarcinogenesis and, 492-93
- Intestinal nematodes
 ivermectin activity against, 446-49
- Introns
 retroelements in, 164
- Isoptera
 baculovirus infection in, 71
- Ilich mite
 ivermectin activity against, 464
- Ivermectin, 445-69
 current distribution of, 468-69
 for filarial infections, 461-64
 for intestinal nematodes, 446-49
 for onchocerciasis, 449-61
 safety in humans, 465-68
- K**
- kDNA, 328-32
 maxicircles in, 329
 minicircles in, 329-31
 mutations in, 331-32
- Keratitis
 punctate
 ivermectin therapy and, 465
- Killer yeast virus
 dsRNA viruses compared, 258-59
- Kinesin
 yeast *KAR3* gene and, 553-54
- Kinetoplast DNA
 See kDNA
- Klebsiella pneumoniae*
 osmoregulation in, 585
- Klebsiella aerogens*
 msDNA and, 165
- Klebsiella pneumoniae*
 type 1 pili of
 binding specificities of, 400-1
 type 3 pili of
 assembly of, 388
- L**
- β -Lactamases, 37-60
 pre-folding and export of, 315-16
- Lactose
 metabolism in *Staphylococcus aureus*, 119
- Leghemoglobin
 soybean symbiosis and, 355
- Legionella pneumophila*
 detection of
 polymerase chain reaction and, 149
- Legume nodulation, 345-70
 in absence of *Rhizobium*, 368-70
- autoregulation of, 362-68
 bacterial symbiont and, 348-54
 control of, 361-62
 developmental regulation of, 354-57
- Leishmania*
 chromosomal mutations in
 neutral, 428-29
 drug resistance in
 dihydrofolate reductase-thymidylate synthase and, 421-22
 glycosyltransferase and, 425
 H region and, 422-25
 mechanisms of, 420-21
 tunicamycin and, 425
 extrachromosomal amplified DNAs in
 structure of, 429-33
 gene amplification in, 417-39
 frequency of, 429
 mechanism of, 433-36
 role in biology and evolution, 436-39
 life stages of, 419
 nonfunctional amplified DNAs in, 428-29
 small linear DNAs in, 427-28
 virus-like particles in, 252-53
- Leishmania braziliensis*
 RNA viruses of, 259-60
 small linear DNAs in, 427-28
- Leishmania braziliensis guyanensis*
 virus-like particles in, 253
- Leishmania donovani*
 antimonial resistance in
 reversal of, 437
 gene amplification in
 agents causing, 424-25
 methotrexate-resistant, 420
 small linear DNAs in, 427-28
- Leishmania* genome, 419
- Leishmania heriti*
 virus-like particles in, 252
- Leishmania major*
 chromosome 2 in
 miniexon array in, 427
 drug resistance in
 gene amplification and, 420
 H region and, 421
 H region amplification in, 422
 multiple-drug resistance genes in, 423
 R region amplification in, 431
 small linear DNAs in, 427-28
- Leishmania mexicana*
 small linear DNAs in, 427-28
- Leishmania mexicana amanoensis*, 260

- arsenite-resistant
chromosomal changes in,
433
- methotrexate-resistant, 420
- Leishmaniasis, 436
- Leishmania tarentolae*
drug resistance in
H region and, 421
gRNA coding sequences of,
335-37
H amplification of
multiple-drug resistance
genes in, 423
methotrexate-resistant, 420
minicircle kinetic complexity
in, 329
minicircle sequence organiza-
tion in, 331
RNA editing in, 333
T amplification in, 426
- Leishmania tropica*
D amplification of, 426
- Lentiviruses, 242
- Lepidoptera
baculovirus infection in, 71
- Leptothrix*, 21
- Leukocytes
polymorphonuclear
host defense against myco-
tic agents and, 516-22
- Leukoencephalopathy
progressive multifocal, 271
- Liver disease
hepatitis B virus and, 483-85
- Loa loa*
ivermectin activity against,
464
- Lymantria dispar*
baculovirus insecticide for,
74
- Lymphatic filariasis
ivermectin for, 463-64
ivermectin safety and
tolerability in, 465-67
- Lymphoma
Burkitt's
chromosomal translocations
in, 493
- T-cell
murine leukemia virus-
inducing, 493
- M
- Macrophages
alveolar
host defense against myco-
tic agents and, 522-24
host defense against mycotic
agents and, 524-26
- Mammals
retroelements in, 164
- Mansonella ozzardi*
ivermectin activity against,
464
- Mansonella persians*
ivermectin activity against,
464
- Marion, P. L., 475-99
- Mass spectrometry
microbial screening and, 100
- Maxicircles, 329
- 2-Mercaptoethanesulfonic acid,
10-11
- 7-Mercaptoheptanoylthreonine
phosphate, 17
- Methane monooxygenase
trichloroethylene oxidation by,
292-95
- Methanobacillus omelianskii*
methanogenesis in, 7-8
- Methanobacterium thermoauto-
trophicum*, 18, 24
- Methanobrevibacter ruminantium*
growth factor required by, 11
- Methanococcus jannaschii*, 24
- Methanococcus voltae*, 24
- Methanofuran, 16
- Methanogenesis, 7-8
enzymology of, 17-20
- Methanogenium cariacii*, 24
- Methanogenium marisnigri*, 24
- Methanogenium thermophilum*,
24
- Methanogens
perchloroethylene dechlorina-
tion and, 285
- Methanomicrobium mobile*
growth factor required by,
17
- Methanopterin, 14-15
- Methanosarcina barkeri*
methanofuran of, 16
- Methanosarcina thermophila*
osmoregulation in, 586
- Methanospirillum hungatei*, 25
- Methanotrophs
trichloroethylene degradation
due to, 292-93
- Methenyl-tetra-
hydromethanopterin, 15
- Methicillin
bacterial resistance to, 60
- Methotrexate
Leishmania resistant to, 420-
25
- 4-Methoxybenzoate monooxyge-
nase
trichloroethylene oxidation
and, 295
- Methylcobalamin
reduction to methane, 8
- Methylmonas methanica*
dichloroethylene oxidation due
to, 293
- Methylosinus trichosporium*
dichloroethylene oxidation due
to, 293
- Microbial screening, 89-103
primary, 98-102
- Microorganisms
commercial applications of,
92
genetically engineered
detection with polymerase
chain reaction, 147-48
- Milbemycins
detection of, 100
- Minicircles, 329-31
- Minixen
in *Leishmania*, 427
- Mitochondria
GroEL-related proteins in,
303
rRNA of
maxicircles encoding, 329
trypanosomatid
RNA editing in, 327-42
- Moenomycin
peptide crosslinking and, 56
- Molecular chaperones
bonding to nascent
polypeptides, 613-15
interactions with unfolded
proteins, 625-28
- Molten globule, 611
- Monocytes
host defense against mycotic
agents and, 524-26
- Moraxella bovis*
type 4 pilins of, 401-2
- mRNA
partially edited, 337-40
quantification of
polymerase chain reaction
and, 150-52
- msDNA, 163-75
biosynthesis of, 171-75
pathway of, 172-73
reverse transcriptase and,
171-72
termination of, 175
discovery of, 164-65
features of, 168-70
genetic locus of, 170-71
structure of, 166-68
- Mung bean
nodulation of, 350
- Murine leukemia virus
T-cell lymphomas induced by,
493
- Murphy, J. W., 509-31
- Mutagenesis
insertional
hepatocarcinogenesis and,
492-93
- Mycetoma
acquisition of, 511

- Mycobacterium vaccae* JOB5
propane monooxygenase system of
vinyl chloride oxidation
and, 295
- Mycotic disease
cellular resistance to, 517-31
genetic predisposition to, 513-15
host factors affecting, 513-16
host-parasite interactions in, 510-16
susceptibility to
hormonal factors in, 515-16
- Mycoviruses
dsRNA viruses compared, 258-59
- Myeloperoxidase deficiency
opportunistic mycotic infection and, 520
- Myxobacter AL-1 protease I, 23
- Myxobacter AL-1 protease II, 23
- Myxococcus coralloides*
msDNA in, 165
- Myxococcus xanthus*
msDNA in, 164-65
retrons in, 180
- N
- Naegleria*
virus-like particles in, 252
- Nalidixic acid
msDNA biosynthesis and, 172
- Nannocystis exedens*
msDNA in, 165
- Natural effector cells
interactions of, 531
pathogenic fungi and, 530-31
- Natural killer cells
pathogenic fungi and, 527-30
- Necator americanus*
ivermectin activity against, 446-47
- Neisseria gonorrhoeae*
msDNA and, 165
penicillin and, 59
pili of, 402-5
type 4 pili of
biogenesis model for, 406
type 4 pili of, 401-2
- Neisseria meningitidis*
penicillin-resistant, 59-60
- Nematodes
intestinal
ivermectin activity against, 446-49
- Neutropenia
opportunistic mycotic infection and, 520
- Neutrophils
Candida albicans hyphae and, 191
- Nicotinamide adenine dinucleotide, 6
- Nikkomycins
detection of, 100
- Nilsson, B., 607-29
- Nitrate
legume nodulation and, 361-62
- Nitrogen
metabolism in *Bacillus subtilis*, 119-24
- Nitropropane dioxygenase
trichloroethylene oxidation and, 295
- Nitrosomonas europaea*
ammonia monooxygenase system of, 288
- Nodulin genes, 355-56
- Normark, S., 383-408
- Nuclear magnetic resonance spectrometry
microbial screening and, 100
- Nuclear polyhedrosis viruses
cellular infection cycle of, 72
- Nuclear polyhedrosis viruses, 70
- Nucleic acids
environmental
isolation for polymerase chain reaction, 142-43
- O
- Onchocerca cervicalis*
ivermectin activity against, 450
- Onchocerca lienalis*
ivermectin activity against, 455
- Onchocerca volvulus*
ivermectin activity against, 456, 459
- Onchocerciasis, 446, 449-61
ivermectin safety and tolerability in, 465-67
- Oncogenesis
hepatnavirus-associated, 477
hepatnavirus-related in experimental systems, 495-97
protooncogene activation and, 491-92
- Oncoviruses, 242
- Orygia pseudotsugata*
baculovirus insecticide for, 74
- Ornithine decarboxylase
Leishmania drug resistance and, 426
- Orthoptera
baculovirus infection in, 71
- Osmoprotectants
environmental sources of, 586-87
- Osmoregulation
prokaryotic, 569-97
genes and proteins in, 588-97
mechanisms of, 571-81
physiology of, 581-88
- Oxalurate
phosphorolysis of, 22
- Oxamate
oxalurate phosphorolysis and, 22
- Oxamic transcarbamylase
allantoin degradation and, 22
- Oxygenases
aromatic
trichloroethylene oxidation by, 288-92
- P
- Panencephalitis
subacute sclerosing, 271
- PapD proteins
pilus assembly and, 388-91
structure-function properties of, 391-92
- Papillomaviruses
carcinogenicity of, 476
- Paracoccidioides brasiliensis*, 190
complement fixation by, 519
compromised host and, 511
mammalian steroid hormones and, 515
natural killer cells and, 527
yeast of
alveolar macrophages and, 522
- Paracoccidioidomycosis*
acquisition of, 511
occurrence of
estrogen and, 515
- Parasponia*
nodulation of, 347
- Pathogens
detection of
polymerase chain reaction and, 148-49
- Pea
nodulation mutants of, 357
nodulation of, 347
- Peanut
nodulation of, 347
- Penicillin
bacterial resistance to, 59-60
peptide crosslinking and, 56
Penicillin-binding proteins, 37-60
high-Mr, 54-60
low-Mr, 45-47

- Pentavalent antimony complexes
for *Leishmania* infection, 418,
437
- Perchloroethylene
dechlorination of
methanogens and, 285
- Periplasm
osmoregulation of, 588
- Pest control
baculoviruses as agents for,
69-85
- Pesticides
viral
genetically enhanced, 76-
78
- P-glycoprotein genes
methotrexate resistance in
Leishmania and, 424
- Phagocytic cells
mycotic agents and, 518-27
- Phagocytosis
Candida albicans hyphae and,
191
- Pili, 383-408
Escherichia coli P and type
1, 384-87
Neisseria gonorrhoeae, 402-5
P and type 1
structure of, 393-98
postsecretory assembly of,
387-93
Pseudomonas aeruginosa, 406
subunit polymerization, 392-
93
type 4
assembly of, 401-6
biogenesis model for, 406
Vibrio cholerae TCP, 405-6
- Pilins
type 4
expression of, 401-2
- Pilus adhesins
receptor binding and assembly
domains of, 398-401
- Plant nodulation mutants, 357-
361
- Plants
retroelements in, 164
- Plasmids
retroelements in, 164
- Plasmodium*
virus-like particles in, 252
- Plasmodium falciparum*
ivermectin activity against,
464
- Polyhedrin, 70
- Polymerase chain reaction, 137-
56
analysis of ribosomal RNA
sequences and, 152-53
detection of genetically en-
gineered microorganisms
and, 147-48
- detection of indicator organ-
isms and pathogens and,
148-49
- DNA cloning and, 153-55
gene probe creation and, 153-
55
isolation of environmental
nucleic acids for, 142-43
products of
detection of, 144-47
quantification of, 149-52
varicella-zoster virus latency
and, 273
- Polymorphonuclear leukocytes
host defense against mycotic
agents and, 518-22
- Polypeptides
nascent
molecular chaperones bind-
ing to, 613-15
proteolytic degradation in
vivo, 618-19
- Postural hypotension
ivermectin therapy and, 465
- Praziquantel
for helminth infection, 449
- Pregnancy
coccidioidomycosis and, 515
ivermectin therapy and, 467
- Procene monooxygenases
trichloroethylene oxidation
and, 295
- Preproteins, 610
signal sequences of, 620-21
- Primaquine
Leishmania major selection
with, 422
- Progesterone
tissue phase of *Candida im-
mitis* and, 515
- Progressive multifocal
leukoencephalopathy, 271
- Prokaryotes
cytoplasmic membrane in
protein translocation across,
619-20
osmoregulation in, 569-97
genes and proteins in, 588-
97
mechanisms of, 571-81
physiology of, 581-88
- Proline isomerization
protein folding and, 617
- Prolyl isomerase
protein folding and, 617-18
- Propane monooxygenase
trichloroethylene oxidation by,
295-97
- Propetides, 610-11
- Protein disulfide isomerase
protein folding and, 623-25
- Protein folding, 607-29
aggregation and, 615-17
- inclusion bodies and, 615-17
intracellular, 613-18
from nascent chain in vivo,
612-13
process of, 611-12
prolyl isomerase and, 617-18
protein disulfide isomerase
and, 623-25
protein secretion and, 619-25
thioredoxin and, 623-25
translational pausing and, 628
- Protein folding pathway, 611
- Proteins
GroE, 303-5
Escherichia coli physiology
and, 311-14
GroEL
evolutionary conservation
of, 305-8
GroES
evolutionary conservation
of, 305-8
heat-shock
regulation of, 614
PapD
pilus assembly and, 388-91
structure-function properties
of, 391-92
penicillin-binding, 37-60
high-Mr, 54-60
low-Mr, 45-47
prokaryotic osmoregulation
and, 588-97
stability of
chain entropy and, 609-10
electrostatic interactions
and, 608-9
hydrogen bonding and, 609
hydrophobic effect and, 609
van der Waals interactions
and, 609
unfolded
interactions with molecular
chaperones, 625-28
See also specific protein
- Proteolysis
in vivo, 618-19
Proteus mirabilis
msDNA and, 165
- Prothrombin time
ivermectin therapy and, 465
- Protooncogenes
activation of
oncogenesis and, 491-92
- Protozoa
viruses of, 251-62
Pseudomonas aeruginosa
msDNA and, 165
PAK pili of
subunit polymerization and,
396
pathogenic genes in
osmotic control of, 597

- pili of, 406
 type 4 pili of
 biogenesis model for, 406
 type 4 pilins of, 401-2
Pseudomonas cepacia
 detection of
 polymerase chain reaction
 and, 147-48
Pseudomonas mendocina
 toluene oxidation pathway of,
 290-91
Pseudomonas putida strain F1
 trichloroethylene oxidation by,
 289
Pseudorabies virus, 272
 Psychrophiles
 isolation of, 97
 Punctate keratitis
 ivermectin therapy and, 465
 Pyruvate
 synthesis of, 5-6
 Pyruvate oxidation factor, 4
- Q
- Quaternary amines
 osmoprotectant activities of,
 584
- R
- Restriction endonucleases
 dsRNA viruses and, 253
 Retinoblastoma
 gene RB-1 and, 493
 Retinoic acid receptor
 hepatocarcinogenesis and, 493
 Retinoids
 cellular proliferation and, 493
 Retroelements, 164
 Retrons, 178-83
 chromosomal integration site
 of, 180-81
 function of, 183
 phylogenetic relationships of,
 181-83
 structure and distribution of,
 178-89
 Retrotransposons
 retroelements in, 164
 Retroviruses
 carcinogenicity of, 476
 life cycle of, 221-23
 retroelements in, 164
 Reverse hybridization
 polymerase chain reaction
 and, 146-47
 Reverse transcriptase, 175-78
 codon usage of, 178
 enzymatic specificity of, 178
 genetic locus of, 175-76
 msDNA biosynthesis and,
 171-72
 structural diversity of, 176-78
 Reverse transcription
 hepadnavirus replication and,
 483
Rhizobium
 β -glucans in, 588
 nodulation in absence of,
 368-70
 symbiotic genes of, 348-50
Rhizobium meliloti
 osmoregulation in, 585
Rhizobium strain NGR234
 legume nodulation and, 346
Rhizopus oryzae
 chemotactic factors produced
 by, 519
Rhodococcus vanniellii, 21
Rhodopseudomonas palustris, 22
Rhodopseudomonas sphaeroides,
 21
Rhodospirillum rubrum, 21
 Rifampicin
 giardiasis and, 257
 msDNA biosynthesis and, 172
 RNA
 See also dsRNA; gRNA;
 mRNA; rRNA
 RNA editing, 327-42
 consequences of, 334-35
 developmental regulation of,
 340-41
 transcript-region specific, 332-
 34
 RNA polymerase II
 retrovirus replication and, 222
 RNase A
 refolding of
 framework hypothesis and,
 611
 RNA sequences
 ribosomal
 polymerase chain reaction
 and, 152-53
 RNA viruses
 of *Leishmania braziliensis*,
 259-60
 Rose, M. D., 539-64
 Roseola infantum
 transmission of, 266
 rRNA
 mitochondrial
 maxicircles encoding, 329
- S
- Saccharomyces cerevisiae*
 effects of trichloroethylene
 on, 286
 nuclear fusion in
 assays for, 545-46
 BIK1 gene in, 555-56
 CDC28 gene in, 560-61
 CDC34 gene in, 560-61
 CDC37 gene in, 560-61
 CDC4 gene in, 558
 CIK genes in, 560
 CIN1 gene in, 559-60
 genes required for, 549-61
 KAR1 gene in, 549-52
 KAR2 gene in, 556-58
 KAR3 gene in, 552-55
 KEM genes in, 558-59
 models for, 561-63
 mutations blocking, 544-45
Saccharomyces cerevisiae
 nuclear fusion in, 539-64
 pathway of, 540-49
Salmonella typhimurium
 β -lactamase of, 49
 hypoosmotic shock and, 588
 msDNA and, 165
 osmoregulation in, 585
 pathogenic genes in
 osmotic control of, 597
 proU operon of, 593-96
Scarcia ventriculi, 22
 Scabies
 ivermectin activity against,
 464
Schistosoma mansoni
 ivermectin activity against,
 464
 Sediment
 isolation of nucleic acids
 from, 143
 trichloroethylene metabolism
 in, 284-85
Serratia marcescens
 msDNA and, 165
Sesbania
 nodulation of, 347
 Sherker, A. H., 475-99
Shigella dysenteriae
 msDNA and, 165
 pathogenic genes in
 osmotic control of, 597
 Signal sequences
 protein folding and, 620-21
 Siratro
 nodulation of, 350
 Sodium arsenite
 Leishmania mexicana ama-
 zonensis and, 422
 Soil
 isolation of nucleic acids
 from, 143
 trichloroethylene metabolism
 in, 284-85
 Solutes
 compatible
 bacterial, 582-83
 Sonenshein, A. L., 107-29
 Soybean
 nodulation of, 347, 350, 362
 inhibition of, 363
 nitrate and, 361-62

- modulation mutants of, 357
 nodule-specific glutamine synthetase from, 355
 Soybean symbiosis
 nodulins and, 355
Sphaerotilus natans, 22-23
Sporothrix schenckii
 compromised host and, 511
 Sporotrichosis
 acquisition of, 511
Staphylococcus aureus
 prenuclease of
 signal sequence of, 621
Staphylococcus aureus
 β -lactamase of, 39-40
 lactose metabolism in, 119
 methicillin-resistant, 60
 Starch
 metabolism in *Bacillus subtilis*, 115-17
 Steele, D. B., 89-103
 Steffan, R. J., 137-56
Stigmatella aurantiaca
 msDNAs in, 164-65
 Stowers, M. D., 89-103
 Straus, S. E., 265-78
Streptococcus allantoicus, 22
Streptomyces albus
 β -lactamase of, 39-40
Streptomyces avermitilis
 avermectins produced by, 446
Streptomyces venezuelae
 carbon catabolite control in, 108
Strongyloides stercoralis
 ivermectin activity against, 448-49
 Strongyloidiasis
 ivermectin for, 449
 Stuart, K., 327-42
 Subacute sclerosing panencephalitis, 271
 Sucrose
 metabolism in *Bacillus subtilis*, 113-15
 Sucrose synthetase
 soybean symbiosis and, 355
 Sugar phosphotransferase system
 phosphoenolpyruvate-dependent
 in *Bacillus subtilis*, 109-12
 Sulfate esters
 osmoprotectant activities of, 584
 Sulfonium compounds
 osmoprotectant activities of, 584
 T
 Taurine betaine
 osmoprotectant activities of, 584
 T cells
 helper
 human immunodeficiency
 virus-1 replication and,
 223-25
 Terbinafine
 Leishmania major selection
 with, 422
 Tertiary template, 611
 Tetrahydrocorphin, 16
 Tetrahydromethanopterin
 methanogenesis and, 15
 Tetranactin
 detection of, 100
 Thermophiles
 isolation of, 97
 Thioredoxin
 protein folding and, 623-25
 Thymidylate synthase
 Leishmania drug resistance
 and, 421-22
 Toluene dioxygenase
 trichloroethylene degradation
 by, 289-90
 Topoisomerase I
 hepadnaviral integration and,
 490-91
 Transgenic mice
 hepadnavirus-related
 oncogenesis in, 496-97
 Trauma
 herpesvirus reactivation and,
 276
 Trehalose
 osmoprotectant activities of,
 584
 Trichenellosis
 ivermectin activity against,
 464
Trichinella spiralis
 avermectins and, 464
 Trichloroethylene
 ammonia monooxygenase
 oxidation of, 288
 aromatic oxygenase oxidation
 of, 288-92
 cytochrome P-450 oxidation
 of, 286-88
 metabolism of, 283-97
 anaerobic, 284-86
 methane monooxygenase oxida-
 tion of, 292-95
 propane monooxygenase oxida-
 tion of, 295-97
Trichodesmium thibautii
 nitrogen fixation genes of
 amplification of, 154-55
Trichomonas vaginalis
 dsRNA in, 252-53
 dsRNA viruses of, 253-55
Trichomonas vaginalis virus,
 253-55
 comparison with mycoviruses,
 258-59
 identification of, 253
Trichophyton mentagrophytes,
 201
 Trichoptera
 baculovirus infection in, 71
Trichuris trichiura
 ivermectin activity against,
 447-48
 Trigger factor, 623
Trypanosoma brucei
 gRNA coding sequences of,
 335-37
 minicircle kinetic complexity
 in, 329
 minicircle sequence organiza-
 tion in, 331
 RNA editing in, 332-33
Trypanosoma equinum
 kDNA deletions in, 331
Trypanosoma equiperdum
 kDNA deletions in, 331
Trypanosoma evansi
 kDNA deletions in, 331
Trypanosomatids
 mitochondria of
 RNA editing in, 327-42
 Tunicamycin
 Leishmania resistant to, 425
 U
 Ultraviolet light
 herpesvirus reactivation and,
 276
 Urease
 in *Bacillus subtilis*, 123
 Ureidoglycolate synthetase
 allantoin degradation and, 22
 Uricase
 soybean symbiosis and, 355
Ustilago maydis virus
 dsRNA viruses compared,
 258-59
 V
 Vaginal candidiasis
 hormones influencing, 515-16
 van der Waals interactions
 protein stability and, 609
 Varicella, 266
 pathogenesis of, 269
 Varicella-zoster virus, 265-78
 infections due to
 animal models of, 270-71
 latency of, 272-76
 molecular biology of, 267-69
 reactivation infections due to
 features of, 270

reactivation of, 276-77
 Velvetbean caterpillar
 baculovirus insecticide for, 75
Vibrio cholerae
 TCP pili of, 405-6
 Tcp pilin of, 402
 type 4 pili of
 biogenesis model for, 406
Vibrio costicola
 osmoregulation in, 586
Vigna radiata
 nodulation of, 350
 Vinblastine
 Leishmania resistance to,
 426
 Vinyl chloride
 propane monooxygenase
 oxidation of, 295
 Viruses
 budded, 71
 dsRNA, 253-59
 granulosis, 70-71
 nuclear polyhedrosis, 70
 cellular infection cycle of,
 72
 protozoan, 251-62
 RNA
 of *Leishmania braziliensis*,
 259-60

See also specific virus
 Visna virus, 241-42

W

Wang, A. L., 251-62
 Wang, C. C., 251-62
 Water
 isolation of nucleic acids
 from, 142-43
 Whipworm infection
 ivermectin activity against,
 447-48
 Wilms' tumor, 493
 Wiskott-Aldrich syndrome, 273
 Wolfe, R. S., 1-28
 Wood, H. A., 69-85
 Woodchuck hepatitis virus, 477-
 78
 infection due to, 484-85, 487
Wuchereria bancrofti
 ivermectin activity against,
 461-64

X

Xylose
 metabolism in *Bacillus sub-*
 tilis, 115

Y

Yeast

 effects of trichloroethylene
 on, 286
 nuclear fusion in, 539-64
 assays for, 545-46
 BIK1 gene in, 555-56
 CDC28 gene in, 560-61
 CDC34 gene in, 560-61
 CDC37 gene in, 560-61
 CDC4 gene in, 558
 CIK genes in, 560
 CIN1 gene in, 559-60
 genes required for, 549-61
 KAR1 gene in, 549-52
 KAR2 gene in, 556-58
 KAR3 gene in, 552-55
 KEM genes in, 558-59
 models for, 561-63
 mutations blocking, 544-45
 pathway of, 540-49

Z

Zeilstra-Ryalls, J., 301-21
 Zoster
 pathogenesis of, 269-70

